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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,748	07/09/2003	Gary A. Brist	42P12136D	2763

7590 11/02/2005  
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Seventh Floor  
12400 Wilshire Boulevard  
Los Angeles, CA 90025

EXAMINER
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ANYA, IGWE U

ART UNIT	PAPER NUMBER
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2891

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/616,748

Applicant(s)

BRIST ET AL.

Examiner

Igwe U. Anya

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-21 and 23-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-21 and 23-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Allowable Subject Matter*

1. The indicated allowability of the claims is withdrawn in view of the newly discovered reference(s) to Marathe et al. (US Patent 6717266), and D'Amato (US Patent 4895099). Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 17 – 20, 23, 24 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Marathe et al. (US Patent 6717266).
4. Marathe et al. teach an apparatus( figs. 2A- 2E), comprising:  
an electrically conductive trace (9) on a substrate, the electrically conductive trace including first (8) and second materials (5), the electrically conductive trace formed by applying a laser beam to the first material disposed on the second material, wherein the laser beam penetrates beyond the first material and into the second material; and diffusing a portion of the first material into a portion of the second material responsive to said applying (col. 8 line 64 – col. 9 line 4); and

an inter-layer dielectric material (10) electrically isolating the electrically conductive trace;

wherein the substrate is part of one of a semiconductor package, a printed circuit board, or a die (col. 7 lines 53 – 58);

wherein the second material includes metal (col. 8 lines 8 – 22).

wherein the electrically conductive trace includes a copper tin alloy (col. 9 lines 4 – 9);

wherein the second material includes copper (col. 5 lines 50 – 59 & col. 8 lines 8 – 22);

wherein the first material includes tin (col. 5 line 60 – col. 6 line 9 & col. 9 lines 4 – 9); and

wherein the first material includes a conversion coating material (col. 5 line 60 – col. 6 line 9 & col. 8 lines 40 – 63).

5. According to the product-by-process doctrine, process language in a product claim must structurally distinguish the invention over the prior art in order to be afforded a patentable weight. As such the limitation of using a laser for diffusion has not been given any patentable weight.

6. Claims 27 – 31 are rejected under 35 U.S.C. 102(b) as being anticipated by D'Amato (US Patent 4895099).

7. D'Amato teaches an apparatus, comprising:

an electrically conductive trace on a substrate, the electrically conductive trace including first and second materials (col. 1 line 41 – col. 2 line 29), the electrically

conductive trace formed by applying a laser beam to the first material disposed on the second material, wherein the laser beam penetrates beyond the first material and into the second material; and diffusing a portion of the first material into a portion of the second material responsive to said applying (col. 2 lines 22 – 29), and wherein the first material includes an organic material (col. 2 lines 15 – 21);

wherein the substrate is part of one of a semiconductor package, a printed circuit board, or a die (col. 1 lines 41 - 440;

wherein the second material includes metal (col. 2 lines 15 – 29);

wherein the second material includes copper (col. 2 lines 15 – 29); and

wherein the first material includes tin (col. 2 lines 15 – 29).

8. According to the product-by-process doctrine, process language in a product claim must structurally distinguish the invention over the prior art in order to be afforded a patentable weight. As such the limitation of using a laser for diffusion has not been given any patentable weight.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marathe et al. (US Patent 6717266).

12. Marathe et al. teach the features previously outlined, but lack wherein the electrically conductive trace is between about 10 microns and about 20 microns in thickness and between about 27 microns and about 35 microns in width.

13. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture a conductive trace of any width or thickness. Where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marathe et al. (US Patent 6717266) in view of D'Amato (US Patent 4895099).

15. Marathe et al. teach the features previously outlined, but lack wherein the first material includes an organic material.

16. However, D'Amato teaches an organic tin material for enhanced bonding.

17. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of D'Amato into the Marathe et al. for enhanced bonding.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

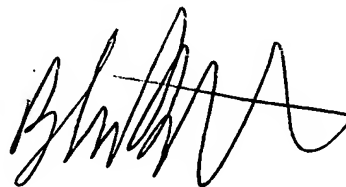
19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William B. Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya  
Examiner  
Art Unit 2891

IA

October 22, 2005



**B. WILLIAM BAUMEISTER  
SUPERVISORY PATENT EXAMINER**